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BED BUGS

Bedbugs, *Cimex lectularius*, are soft-bodied, flat-shaped, brown to rusty-red colored insects. Adults are about the size of an apple seed. Like fleas, ticks, head lice and mosquitoes, bed bugs feed on blood. Similar to mosquitoes, bed bug abdomens swell and become brighter red as they feed. Bed bugs can survive for months without feeding.

Unlike fleas, ticks and mosquitoes, bed bugs are not known to transmit disease. Bites are often painless initially but may become large, itchy welts. Although bed bugs are most often found associated with locations where humans sleep, they may be inadvertently transported via clothing or other belongings and can be found in any location frequented by people including hotels, workplaces, movie theaters and schools.

Bed bugs are most active at night, often sheltering during the day on the bed frame, boxspring, mattress or headboard, or within five feet of a bed. Bed bug eggs, immature nymphal stages and adults can all be found together in bed frames, seams of mattresses and box springs, and under and behind other furnishings. Bed bugs excrete digested blood which appears as dark spots or smears in these same locations.

Bed bugs typically become a problem in schools when carried in by students or staff via backpacks, clothing or other belongings. In communities experiencing high rates of bed bug infestations in homes, introductions into schools can occur frequently. Schools generally do not experience established, reproducing infestations unless children and staff board at the school, or the school shares space with facilities where humans sleep at night. Bed bug eggs do not necessarily indicate a reproducing population; they more likely result from an egg-carrying female transported into the school by a student, staff member or visitor.

When a bed bug is found, it can be difficult to determine the source. A bed bug found on a student or student's belongings may have come from another student or a staff member rather than from the student's home. Similar to head lice, it is very important to address the issue with care and sensitivity. There is no association between cleanliness, socioeconomic status and bed bug infestations. Anyone can experience an infestation.

If a suspected bed bug is found in school, it should be collected for identification by a trained professional. Similar species may also be found in schools, including those that feed on bats or birds. To collect a specimen, use a piece of tape or tissue, place the specimen in crushproof container with a small amount of rubbing alcohol or if no alcohol is on hand, place the container in the freezer for several hours to kill the insect. Do not crush the specimen. Do not mail or transport live specimens which can escape during transit.

Collect the following information for each specimen: date found, name and contact information for the person collecting the specimen, location found (e.g., on a student, on student's belongings or on walls or furniture), room number, school name, school principal name and phone number. Have the insect identified by a professional.

If the specimen is confirmed to be a bed bug, the principal and school health professional should be notified and the following steps are recommended:

1. The classroom or other area where the bed bug was found should be carefully inspected by a trained professional including desks, floors, walls and storage areas for student belongings. A thorough cleaning may be needed including vacuuming with special attention to cracks and crevices in furniture and equipment, walls and floors, and laundering washables in hot water and drying on the highest heat

setting. Delicate fabrics can be dry cleaned or soaked in warm water and laundry soap for several hours before rinsing. Infested items that cannot be cleaned or treated with high heat (>120F for several hours) should disposed of in an appropriate manner. When transporting potentially infested items, place in plastic bags to reduce potential for accidental spread of bed bugs to other areas. If taking potentially infested items to a dry cleaner, bag the items and notify the establishment so that they can take additional precautions to prevent spread. If these measures are not adequate to resolve a problem, a licensed pest management professional can review additional options including heat treatment of infested areas and pesticides labeled for bed bugs.

2. If the bed bug was found on a child's clothing or other belongings, the child's parent(s) or guardian(s) should be notified. There is no need to send the child home. Similar to head lice, the school health professional should manage the case including re-inspecting belongings, desk, classroom, etc. until the problem is resolved. Student belongings such as backpacks can be isolated in tight-sealing plastic containers or bags to reduce potential for bed bug dispersal, both at home and in school while the problem is being resolved.

3. Parents of all children using the room where the bed bug was found should also be notified and provided with basic information about bed bugs including description, signs and symptoms, strategies to eliminate infestations in homes including cleaning, laundering and specially designed mattress and box-spring covers that can entrap bed bugs and reduce harborage. The information should include where to go for additional help.

Table 8.9 Products for physical, cultural or mechanical management of bed bugs and uses. In nearly all cases, careful inspection, vacuuming, laundering and school health professional case management will be adequate to resolve a confirmed bed bug sighting in schools without space heat or steam treatment. Note: Bleach and ammonia are not effective against bed bugs. Soap and water is effective for removing bed bugs, eggs and debris from surfaces.

Type	Example Products	Uses
space heating equipment	ThermaPureHeat®	Increase temperature of an enclosed space, e.g., classrooms to 113F or higher for at least 60 minutes. Professional use only to ensure adequate heating and avoid damage to heat-sensitive items.
sealants	many	Seal cracks, crevices especially in areas used to store student belongings brought from home to eliminate harborage.
steamers	many	Penetrate carpet, cracks and crevices in furniture and equipment with high temperature steam to kill bed bugs and eggs.
vacuum, HEPA filtered	Sierra Backpack Vacuum	Vacuum up bed bugs, eggs and associated debris.
washing/drying	many	Launder infested/potentially infested bedding, clothing, other washables.

Additional resources for bed bug management

Armed Forces Pest Management Board. 2010. Technical Guide No. 44, Bed Bugs—Importance, Biology and Control Strategies. http://www.afpmb.org/pubs/tims/TG44/TG44.pdf

Michigan Bed Bug Working Group. 2009. Bed Bugs: What Schools Need to Know. www.michigan.gov/documents/emergingdiseases/Bed_bugs_schools_293498_7.pdf

New York City Dept. of Education. Siciliano, M.A., ed. 2007. Bed Bug Kit. Specimen Collection and Mailing Procedure; Bed Bug Protocol for Schools; Parental Notification Letter; Specimen Data Submission Form; NYC Dept. of Health and Mental Hygiene Fact Sheet in English and Spanish. 9 pp. http://schools.nyc.gov/NR/rdonlyres/8E645CCF-37CF-481E-82C3-63A3EEDD9007/0/BedBugKit.pdf

New York City Dept. of Health and Mental Hygeine. 2008. Stop Bed Bugs Safely. Two-page fact sheet available in English and Spanish. www.nyc.gov/html/doh/downloads/pdf/vector/vector-faq1.pdf